AECOM

Standard Operating Procedure
Lower Passaic River Restoration Project

Sample Custody

Procedure Number: LPR-G-05

Revision No.: 6

Revision Date: July 2011

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Annual review of this SOP has been performed
and the SOP still reflects current practice.

Initials: _____ Date: _____
Initials: _____ Date: _____

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Contents

1.0 Scope and Applicability

1.1 The purpose of this document is to define the standard operating procedure (SOP) for the chain-of-custody (COC) procedures associated with samples collected in the Lower Passaic River Study Area and the Newark Bay Study Area as part of the Lower Passaic River Restoration Project (LPRRP). The objective of COC procedures is to provide sufficient evidence of sample integrity to satisfy data defensibility requirements. Samples may include sediment or water collected or generated for chemical, radiochemical, biological, and/or physics analyses, and associated quality assurance (QA) analysis. This SOP is intended to be complete enough so that: 1) the steps which could affect tracking, documentation, or integrity of samples are explained in sufficient detail and 2) different sampling personnel following these procedures will deliver samples to the laboratory which are equally reliable and consistent, and in compliance with regulatory agency requirements.

1.2 It is expected that the procedures outlined in this SOP will be followed. Procedural modifications may be warranted depending on field conditions, equipment limitations, or limitations imposed by the procedure. Substantive modification to this SOP will be approved in advance by the Task Manager and the Project QA Manager and will be communicated to the Cooperating Parties Group (CPG) Project Coordinator and the United States Environmental Protection Agency (USEPA) Remedial Project Manager. Deviations from the SOP will be documented in the field records. The ultimate procedure employed will be documented in the report summarizing the results of the sampling event or field activity.

2.0 Health and Safety Considerations

2.1 Although COC activities do not generally pose significant health and safety risks, sample exposure via external container residues may occur and much of the work going on in the vicinity of sample custodians requires attention to safety practices. Project-related physical, chemical and biological hazards are addressed in the site specific Health and Safety Plan (HASP) and associated addendums (MPI 2005a; MPI 2005b; AECOM 2011).

2.2 Daily safety briefs will be conducted at the start of each working day before any work commences. These daily briefs will be facilitated by the Site Safety Officer (SSO) or his/her designee to discuss the day's events and any potential health risk areas covering every aspect of the work to be completed. As detailed in the HASP, everyone on the field team has the authority to stop work if an unsafe condition is perceived until the conditions are fully remedied to the satisfaction of the SSO.

3.0 Interferences

Not applicable.

4.0 Equipment and Materials

The following equipment list contains materials which may be needed in carrying out the procedures contained in this SOP. Not all equipment listed below may be necessary for a specific activity. Additional equipment may be required, pending field conditions.

- personal protective equipment (PPE) and other safety equipment, as required by the HASP;
- sample containers as specified in the QAPP (Worksheet #19);
- sample labels;
- chain of custody forms;
- custody tape or seals;
- field logbook;
- ballpoint pen or fine-tipped marked (e.g., Sharpie®); and
- clear plastic sealing tape.

5.0 Procedures

5.1 General requirements

5.1.1 As few people as possible should handle the samples.

5.1.2 Sampling personnel should be able to testify that tampering of the samples could not occur without their knowledge.

5.2 Sample identification

Each sample, including field samples and quality control (QC) samples (e.g., trip blanks, equipment rinsate blanks, field duplicates) will be assigned a unique identification. Refer to the corresponding QAPP (Worksheet #27) for the sample identification protocol.

5.3 Sample labeling

5.3.1 A label will be attached to each bottle used for sampling. Waterproof, adhesive labels are preferred. Labels will be applied to the container, not the lid, whenever possible.

5.3.2 When practical, the project identification, sample matrix, laboratory designation/analyses requested, field sample identification code, and preservation will be typed or printed onto the label before sampling. The label will be protected from water and solvents with clear packing tape, except in cases where not appropriate (for example, pre-weighed VOA vials).

5.3.3 Completion of the sample labels (including the sampler's initials and the date and time of sample collection) will occur at the time of sample collection. Labels will be completed in waterproof, indelible ink.

5.4 Sample tracking

5.4.1 From the time of collection through transportation, the handling of samples will follow COC procedures. A representative from each sampling team (e.g., from each vessel) will be assigned as the field sample custodian. This individual will be responsible for the custody of the samples from collection until release to CPG field facility Sample Management Officer (SMO) for processing or shipment to the laboratories. The field sample custodian will provide a sample transfer/custody form and the completed and electronic versions of the sample collection forms (refer to SOPs LPR-S-01 – Grab Sampling, LPR-S-02 – Sediment Coring Using a Piston Push Core, and LPR-S-03 – Sediment Sampling Using a Vibracorer) to the CPG Field SMO when relinquishing the collected samples for sample processing or shipment. The CPG Field SMO will verify the samples against the sample transfer/custody form and then sign the form accepting custody of the samples. An example sample transfer/custody form for field to CPG facility transfer of sediment cores is provided as Attachment 1; a similar form or a standard chain of custody (COC) form (Attachment 2) may be utilized for other types of samples.

5.4.2 A sample is considered under a person's custody if one or more of the criteria are met:

- sample is in the person's possession;
- sample is in the person's view after being in person's possession;
- sample was in the person's possession and then was locked up to prevent tampering; or
- sample is in a designated secure area.

5.4.3 Samples collected for analysis will be continuously tracked in the CPG field facility and while in transit to the laboratory by use of the following procedures below. The CPG field facility is locked, with limited access, and is therefore considered to be a secure area.

5.4.4 Individual sample bottles will be properly labeled and securely sealed before being placed in the container for shipment to the laboratory.

5.4.5 Pertinent information will be entered on the COC form (Attachment 2) and will include

- project identification (project and task number, LPRRP sampling program);
- signatures of samplers;
- sample identification code. This code should be unique to the sampling event and to the program and must agree exactly with the field sample identification code recorded on the bottle label;
- date and time of sample collection,
- sample matrix (sediment, water, etc.);
- analyses requested;
- number of sample containers;
- preservative;
- grab or composite sample designation (if applicable);

- sampler's remarks (optional). These comments may serve to alert the laboratory to highly contaminated samples or identify QC sample requirements.
- signatures of individuals involved in sample transfer;
- destination (e.g., laboratory name and location);
- page number (for example: 1 of 2, 2 of 2);
- if applicable, COC tape numbers; and
- if applicable, the air bill or other shipping number.

This information is consistent with guidance in SW 846, Test Methods for Evaluating Solid Waste (USEPA, 1993).

5.4.6 The COC will be manually filled out completely and legibly in indelible ink, or reproduced from electronic sample forms produced directly from EQuIS Data Gathering Engine (EDGE)™ software from Earthsoft (refer to SOP LPR-G-01 – Field Records). COCs may be pre-printed with known information (project identification, parameters to be analyzed, etc.). Corrections will be made, if necessary, by drawing a single line through and initialing and dating the error. The correct information will then be recorded with indelible ink. There should be no unexplained blank spaces. Blank lines will be lined out and initialed and dated.

5.4.7 Each COC will be cooler-specific (i.e., list only the samples packed in the cooler). Information on the COC must agree exactly with that recorded on the sample containers. Discrepancies may result in the samples being incorrectly logged into the laboratory or delays in initiating sample analysis.

5.4.8 The completed COC form will be signed, dated, enclosed in a sealable plastic bag, and placed in the container prior to shipment. A copy of the COC will be retained by field personnel and stored in a dedicated binder or file. Additional copies will be distributed via email or fax as follows:

- Project Chemist or his/her designee;
- Data Management Task Manager or his/her designee;
- CPG QA coordinator, and
- laboratory project manager at each laboratory being used.

5.4.9 Samples will be considered in the custody of the field sample custodian or CPG Field SMO while in his/her possession or within sight, or maintained in a secure area prior to shipment. If the person packing the container and verifying the sample list (i.e., the CPG Field SMO) is different than the sampler, and the sample transfer/custody form (see Attachment 1 or equivalent) has been completed, the CPG Field SMO will sign the COC form to relinquish custody. The field sample custodian will sign each COC as the sampler.

5.4.10 If samples are to be shipped by commercial overnight carrier, COC seals must be used and the COC seal numbers recorded on the COC form. See Attachment 3 for an example COC seal. Refer to SOP LPR-G-06 – Packaging and Shipment of Environmental Samples for specific packaging procedures. Representatives of commercial carriers are not required to

sign the COC form.

5.4.11 If samples are hand carried to a laboratory, custody will be maintained and documented on the COC form through the process (e.g., from the person packing the cooler to the person transporting the samples to the laboratory).

5.4.12 If samples are transmitted to the laboratory by courier, the procedures described in either Section 5.4.10 or 5.4.11 will be followed, depending on whether the courier is a commercial courier or laboratory representative, and whether the cooler has been secured by COC seals prior to pick up by a laboratory courier.

5.4.13 Upon receipt at the laboratory, the designated laboratory sample custodian will sign the COC form indicating receipt of the incoming field samples. The samples will be checked against the COC form upon arrival at the laboratory. The receiving personnel will enter all arriving samples into the laboratory system. Any discrepancies between the samples and the COC form(s), or any evidence of tampering with the shipping container or the custody seal will be immediately reported to the Project Chemist. The laboratory sample custodian will check the temperature of the cooler upon arrival at the laboratory and record the measured temperature on the COC and/or appropriate sample/cooler receipt forms. The Project Chemist will be immediately notified of any sample preservation issues, including temperature exceedances.

5.4.14 A completed copy of the COC form will be distributed via email or fax to the Project Chemist within 24 hours of sample receipt at the laboratory. The original will be retained by the laboratory.

6.0 Quality Assurance/Quality Control

6.1 Completed COCs will be reviewed by the individuals preparing the samples for shipment for completeness, accuracy, and legibility. Specifically, the samples and COC record will be compared to ensure agreement between the sample labels and the COC, and to verify the number of sample containers.

6.2 These records are subjected to periodic review by the Field Task Manager to verify adherence to the procedures outlined in this SOP.

7.0 Data and Records Management

7.1 The records associated with the custody process (transfer forms, COC records, airbills, etc.) will be maintained at the CPG field facility in an organized and contained manner (e.g., 3-ring binder or file folder) for the duration of the sampling event.

7.2 COC records will be distributed to the appropriate personnel as described in the Lower Passaic River Data Management Plan (DMP; AECOM 2010).

7.3 Deviations to the procedures detailed in the SOP will be recorded in the field logbook at the time of occurrence and summarized on the Daily Activity Log (refer to SOP LRP-G-01 – Field Records). A formal nonconformance report (NCR) will be completed (refer to SOP LRP-G-01 – Field Records) and

distributed as specified in the QAPP.

7.4 All records associated with the activities described in this SOP will be ultimately maintained in accordance with the Lower Passaic River Restoration Project Quality Management Plan (AECOM 2009).

8.0 Personnel Qualifications and Training

Individuals executing these procedures will have read and be familiar with the requirements of this SOP and the corresponding LPRRP plans (e.g., HASP, QAPP, DMP). No specialized training is required; however, execution of these activities will initially be supervised by more experienced personnel.

9.0 References

AECOM 2009. Quality Management Plan, Lower Passaic River Restoration Project, CERCLA Docket No. 02-207-2009. September 2009 or current version.

AECOM 2010. Lower Passaic River Data Management Plan. July 2010, or current version.

AECOM 2011. Lower Passaic River Restoration Project, Remedial Investigation, Health and Safety Plan Addendum. June 2011 or current version.

MPI 2005a. Lower Passaic River Restoration Project Health and Safety Plan. January 2005.

MPI 2005b. Lower Passaic River Restoration Project Health and Safety Plan Final Addendum – Sediment Coring. July 2005.

Tierra 2007. Standard Operating Procedure No. 2 (Revision 2), Containers, preservation, handling, and tracking of samples for analysis. Newark Bay Study Area Phase II RIWP, Appendix F, October, 2007.

United States Environmental Protection Agency. 1997. SW 846, Test Methods for Evaluating Solid Waste.

10.0 Revision History

Revision	Date	Changes
0	May 2008	NA
1	July 2008	Changes to Sections 5.3, 5.4.1 and 5.4.8
2	September 2009	Minor changes to address non-sediment samples
3	June 2010	Minor changes to address surface water sampling; organizational changes; update logo

4	September 2010	Minor revisions throughout document
5	June 2011	Minor revisions throughout document
6	July 2011	Added Newark Bay Study Area

Attachment 1 Example Grab/Core Field Custody and Transfer Form

Grab/Core Field Custody and Transfer Form
Lower Passaic River Restoration Project, Remedial Investigation
Project No: 60145884

Grab/Core ID	Segment (Cores only)	Length (in)	Collection		Storage Conditions[1]		Comments
			Date	Time	Transit	Facility	

[1]Freeze (F) or chill on ice (C)

Relinquished by: (print name/affiliation)	Date:	Received by: (print name/affiliation)	Date:
Signature	Time:	Signature	Time:
Relinquished by: (print name/affiliation)	Date:	Received by: (print name/affiliation)	Date:
Signature	Time:	Signature	Time:
Relinquished by: (print name/affiliation)	Date:	Received by: (print name/affiliation)	Date:

Signature	Time:	Signature	Time:

Attachment 2 Example Chain-of-Custody Form

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CHAIN OF CUSTODY RECORD

Page ___ of ___

Client/Project Name:	Project Location:	Analysis Requested	Container Type / Preservative
CPG/LPRRP RI LRC/Sediment Sampling	**Lower Passaic River, NJ**		P – Plastic; G – Glass; V – VOA Vial; O – Other; E – Encore / 1 – HCl; 2 – H2SO4; 3 – HNO3; 4 – NaOH; 5 – NaOH/ZnAc; 6 – Na2S2O3; 7 – Ice; 8 – MeOH/DI water/ice
Project Number: **60145884**	Field Logbook No.:		
Sampler (Print Name)/(Affiliation):	Chain of Custody Tape Nos.:		Matrix Codes: DW – Drinking Water; WW – Wastewater; GW – Groundwater; SW – Surface Water; ST – Storm Water; W – Water / S – Soil; SL – Sludge; SD – Sediment; SO – Solid; A – Air; L – Liquid; P – Product
Signature:	Send Results/Report to: **Marie Wojtas/ENSR** TAT: **see QAPP**		

Field Sample No./Identification	Date*	Time*	COMP	GRAB	Sample Container (Size/Matl)	Matrix	Preserv.	Field Filtered	Lab I.D.	Remarks
				√						
				√						
				√						
				√						
				√						
				√						
				√						
				√						
				√						
				√						
				√						
				√						

Relinquished by: (Print Name)/(Affiliation)	Date: / Time:	Received by: (Print Name)/(Affiliation)	Date: / Time:	Analytical Laboratory (Destination):
Signature:		Signature:		
Relinquished by: (Print Name)/(Affiliation)	Date: / Time:	Received by: (Print Name)/(Affiliation)	Date: / Time:	
Signature:		Signature:		
Relinquished by: (Print Name)/(Affiliation)	Date: / Time:	Received by: (Print Name)/(Affiliation)	Date: / Time:	Sample Shipped Via: UPS FedEx Courier Other — Temp blank: Yes No
Signature:		Signature:		

*For sediments, represents the date and time of core/grab collection, not processing

Serial No. _____

Attachment 3 Example Chain-of-Custody Seal